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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,591	12/15/2000	Jim Otter	60,246-116	1229

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EXAMINER	
PARKER, FREDERICK JOHN	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 08/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/738,591	OTTER, JIM	
	Examiner	Art Unit	
	Frederick J. Parker	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5,7,22,25-27,29-40 and 42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *27,40* is/are allowed.

6)☒ Claim(s) *1-3,5,7,22,25,26,29-39 and 42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The 35 USC 112/1st rejection of the Previous Office Action is withdrawn in view of cancellation of claim 41 thereby rendering the rejection moot.

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation of having the first roller "resist cooling of the film" can only be interpreted to mean that cooling is prevented and heating of the film is maintained. This is supported by page 4, 19-20 (which Applicant cites as "support") which states "the first smaller roller 24 is controlled to prevent the film from cooling too fast". Thus the specification clearly requires at least some cooling, albeit at a specific rate whereas the claim amendment resists/ prevents cooling. Thus the limitation is deemed to be New Matter.

3. The rejections of the previous Office Action are withdrawn in view of amendment of claim 1, and replaced by those which follow:

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-3, 5,22,26,33-35,37-39,42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of Barclay US 2899288 in combination, and further in view of Walling US 5728424 and Takagi US 3450585.

Bentley teaches a heat exchanger part formed by laminating a corrosion-resistant, stable thermoplastic polymer sheet material to a metal surface (carbon steel, aluminum, etc), col. 3, 43-col. 4, 43. In service, the resultant part permits flow of condensed water which is removed from the unit in the presence of a corrosive flue gas. The mode of making the polymer sheet material is not limited, thereby including extrusion per claim 38. It is further the Examiner's position that the method of making the sheet is irrelevant since material behavior is the same regardless of forming method, absent a clear showing to the contrary. Use of polar particulates on the sheet material is not cited.

Kaneko et al teaches forming similar heat exchanger parts comprising a metal substrate onto which is applied a thermoplastic, corrosion-resistant polymer coating film, and then applying thereto polar silica particles to increase wettability of the surface and hence process efficiency (col. 1, 30-50; col. 2, 52-63; col. 3, 3-37). Application may be by powders, an aqueous suspension, sol solution, etc. As noted in Example 8, resin-coated panels were squeezed and dried, followed by application of the silica in sol form (a sol being a liquid dispersion of very

fine-sized particulates), followed by roller squeezing and heating (necessarily ultimately including cooling to provide utility to the article), according to claims 3-4.

Both references are directed to forming heat-exchanger parts having surfaces which are corrosion resistant by virtue of a thermoplastic polymeric surface layer (per claim 2) and demonstrate wettability to allow condensate flow. While Bentley et al does not teach application of polar particles, Kaneko et al explicitly teaches to apply such particles for improved wetting, such that one of ordinary skill would have been motivated to apply polar particles to the thermoplastic sheet material of Bentley et al to provide the advantage of improved wetting and process efficiency. The concept of application of particles to a heated film and embedding with one or more thermally controlled rollers is not cited.

Barclay teaches to apply and spread abrasive particles onto a preheated thermoplastic sheet which may be softened by the heat, and running the coated/preheated sheet through a pair of rollers (per claim 5) with a cooling fluid therein so that temperature of the particle coated sheet is regulated to allow embedding of the particles and cooling to return the plastic material to its "original state (solid). See col. 1,63- col. 2, 12. Barclay provides a method of bonding particles to plastic substrates which obviates an adhesive, thereby improving cost-effectiveness, and is simpler and commercially feasible (col. 1, 25-35). Since Barclay is directed to applying and adhering particles to a plastic sheet, as is the combination of references above, although for different products Barclay is analogous art directed towards the same field of endeavor (applying particles to a polymeric sheet substrate) . In re Biglio 72 USPQ2d 1209. Similarly Walling applies and embeds solid particulates to a plastic geomembrane web, in which on col. 4, 63- col. 5, 60 it is taught to preheat the plastic web using a postheater 24 to achieve "the desired degree

of bond (adhesion) between the granules (or particles) and the membrane 12 " (plastic), and further it is disclosed that rollers 42,44 can serve the purposes of the postheater to cause said bonding. Thus is drawn a nexus between rollers and a post-heater to cause bonding, the post-heater providing a temperature cycle to achieve the bonding. Given the suggestion of a roller utilizing heat for bonding instead of a heater, one of ordinary skill would have looked to heated rollers systems such as that of Takagi which provides a nip for a plastic/ resin sheet in which the top roller 1' is heated and bottom roller 1 is cooled to control melting of the sheet even though the top surface may experience high heat from the upper roller, per claim 42. The ultimate product would have been particles bonded into the plastic sheet material.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Bentley et al by incorporating polar particles onto the corrosion-resistant thermoplastic as taught by Kaneko et al to improve wettability and overall process efficiency, and further incorporating embedding particles into the sheet in place of adhesive as taught by Barclay using thermal heating/ rollers per Walling and Takagi to provide an improved method of embedding particles for heat exchange applications which eliminates the detriments of adhesive and provides a simpler, more cost-effective process.

As to claims 37 & 22, Kaneko et al expressly discloses polar silica particles and olefin type resin films (col. 2, line 61), encompassing conventional polyolefins. Surface tension/ energy of the film comprising the polar silica particulates must necessarily be increased in both the Applicants invention and combination of references of the rejection to increase flow/ wettability of condensed water as taught by Kaneko et al (col. 3, 23-53) per claim 26. As to claim 5, using both adhesive and hot pressing to imbed particles together would have been an obvious method

of adhering particles since both ways are know means to bond particles to a thermoplastic sheet substrate.

6. Claims 25,29-32,36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of Barclay US 2899288 in combination, and further in view of in view of Walling US 5728424 and Takagi US 3450585, and further in view of Rickert Jr US 4181773 or Stewart US 4921646 or Steele et al US 5264250 or Hommeltoft et al US 5245100 (hereafter the "alternate references").

Previous references are cited for the reasons above, incorporated herein.

While Bentley et al does not teach application of polar particles, Kaneko et al explicitly teaches to apply such particles for improved wetting, such that one of ordinary skill would have been motivated to apply such polar particles, e.g. silica, to the thermoplastic sheet material of Bentley et al to provide the advantage of improved wetting and process efficiency. While additional polar particulates are not taught, the alternate references teach additional inorganic polar particulates, as follows;

Steele teaches coating heat transfer surfaces to provide wetting, the coating comprising inorganic particulates of silica and/ or calcium silicate (= wollastonite), col. 3, 6-38.

Rickert Jr teaches coating aluminum surfaces to render them wettable by applying coatings comprising alumina, etc, col. 1, 51 to col. 2, 14.

Stewart teaches on col. 3, 1-4, that talc, glass (= silica), etc have polar properties.

Hommeltoft et al teaches on col. 3, 41-44 the equivalence of zirconia , titania and silica as polar ceramic materials. Titania is inherently a germicidal material as defined by Applicants, see Specification page 5, 15-17, thereby meeting the limitation of claim 25.

Since the alternate references teach other inorganic polar materials including those used to coat surfaces to enhance wetting, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute one or more of wollastonite, alumina, or talc in place of silica as taught by Bentley et al , Kaneko et al, Barclay, and Walling and Takagi US 3450585 because the particulates of the "alternate references" would have been expected to improve the wettability of surfaces to which they are applied.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bentley et al US 4848314 in view of Kaneko et al US 4421789 and further in view of Barclay US 2899288 in combination, and further in view of Walling US 5728424 and Takagi US 3450585, and further in view of further in view Linford US 6132801. Previous references are cited for the reasons above, incorporated herein.

Linford teaches on col.1, 33-54 and col. 5, 1-8 that the application of a polymeric coating on silica and other inorganic particles allows a more robust coating attachment in micro particle/ polymer composite materials to prevent de-bonding of the particles. Since the combination of references teaches polar particles adhered to a polymeric base, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Prior Art references by coating the applied particles with a polymeric coating as taught by Linford to provide the benefits of a stronger attachment of the particles to the base, thereby reducing de-bonding of the crucial inorganic particles and resulting in a longer useful lifetime of the parts.

7. Claims 27 and 40 are allowable for the reasons cited in the previous Office Actions.

Response to Arguments

The Examiner has considered Applicants arguments relative to the last Office Action. Issues related to 35 USC 112 and new claim 42 are discussed in the appropriate sections, above. Reponses to additional arguments regarding the amended claims are addressed in the new rejections above, and will not be repeated for sake of brevity.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick J. Parker whose telephone number is 571/ 272-1426. The examiner can normally be reached on Mon-Thur. 6:15am -3:45pm, and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571/272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Frederick J. Parker
Primary Examiner
Art Unit 1762

fjp